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| Logo**Good Shepherd Lutheran College**  **Assessment Task**  **Cover Sheet** | | |
| ***DETAILS*** | | |
| ***Title:*** *Quadratic Function Reflection Task* | | |
| ***Teacher:*** *Pushpa Choudhary* | ***Student Name:*** | ***Class:*** |
| ***Date set:*** *13.09.2011* | ***Due date:*** *19.09.2011* | |
| ***PURPOSE & BACKGROUND OF AS SESSMENT TASK*** | | |
| Students have had the opportunity in class to explore the concepts of Quadratic function. As an extension to this they are required to complete a reflection task. | | |
| ***DESCRIPTION OF ASSESSMENT TASK*** | | |
| Work through the instructions attached, showing all your working out and solutions.  Work must be presented in a neat and ordered way. | | |
| ***ASSESSMENT CRITERIA*** | | |
| Criterion C2  Criterion D1& 2 | | |

**Investigating quadratic functions**

For this report, you will be examining quadratic graphs and how certain operations can change the shape or the appearance of the graphs. You will be expected to demonstrate your understanding of these changes by writing a report explaining clearly what has happened.

Your report should be a reasoned piece of mathematical writing where all changes are described clearly, accurately, and concisely. You must also explain why these changes take place. You will be expected to use tables, graphs and any other diagrams you feel necessary to back up your explanations. You should be using a range of technology, including graphic software on the I pad.

You must investigate each pattern and explain the reasons for the patterns.

**Procedure**

1. Sketch the graphs of:

(a) 

(b) 

(c) 

What do you notice? How was the axis of symmetry affected? Generalize the pattern that you notice from this step of the investigation.

2. Sketch the graphs of:

(a) 

(b) 

(c) 

What do you notice? How was the axis of symmetry affected? Generalize the pattern that you notice from this step of the investigation.

3. Where would you expect the vertex of the graph  to be? Explain your reasoning clearly.

4. Explain how the equation  can be used to determine the location and shape of the equation’s graph.

5. Sketch the graphs of:

(a) 

(b) 

(c) 

What do you notice? How was the axis of symmetry affected? Discuss the shape of these graphs in relation to the shape of . Generalize the pattern that you notice from this step of the investigation.

6. Investigate what happens in step 5 when the coefficient of  is negative. What do you notice? Generalize your findings for this step of the investigation.

7. Predict what the graph of  would look like. Test your prediction using technology. Repeat this with two other functions.

8. Explain how the equation  can be used to determine the location and shape of the equation’s graph.

9. Do your findings from this investigation apply to the graphs of other functions? Generalize your findings for all functions.

10. How could these findings be applied in real life? Explain with examples.

**Assessment**

Your report will be assessed using criteria C and D. You are required to complete the self-assessment rubric and attach it to your report for submission.

The indicators column of the assessment rubric outlines what is expected of you for this assessment. The better you understand the rubric, the better you will do in this assessment, so:

READ THE RUBRIC PRIOR TO COMMENCING THIS ACTIVITY

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| **Continuum Level** | **C 2: Reasoning** | **D1: Explains and Justifies results** | **D2: Explains findings and suggests Improvements** |
| **1** | The student does not reach a standard described by any of the descriptors above. | The student does not reach a standard described by any of the descriptors above. | The student does not reach a standard described by any of the descriptors above. |
| **2** | The lines of reasoning involving simple problems are **difficult to follow**. | The student **attempts to explore** whether his or her results make sense in the context of the problem.  You have tried to state if the results make sense. | The student **attempts,** with support**, to describe** the importance of his or her findings in connection to real life where appropriate. |
| **3** | The lines of reasoning are **difficult to follow**. | The student **attempts to explain** whether his or her results make sense in the context of the problem.  You have tried to explain why/not the results make sense. | The student **attempts to describe** the importance of his or her findings in connection to real life where appropriate.  You have tried to explain how Quadratic function is important in real life |
| **4** | The lines of reasoning involving simple problems are **clear** though **not always logical** or **complete**. | The student **correctly but briefly explains** whether his or her results make sense in the context of the problem and **attempts,** with support, **to justify** the degree of accuracy of his or her results where appropriate.  You have tried to explain why/not the results make sense and have given an alternate solution. | The student **begins to describe** the importance of his or her findings in connection to real life where appropriate.  You have started to explain how Quadratic function is important in real life |
| **5** | The lines of reasoning are **clear** though **not always logical** or **complete**. | The student **correctly but briefly explains** whether his or her results make sense in the context of the problem and **attempts to justify** the degree of accuracy of his or her results where appropriate. You have explained why/not the results make sense and have given alternate solutions. | The student **describes** the importance of his or her findings in connection to real life where appropriate. You have explained how Quadratic function is important in real life with some detail. |
| **6** | The lines of reasoning are **often concise**, **logical** and **complete**. | The student **critically explains** whether his or her results make sense in the context of the problem and attempts to **justify** the degree of accuracy of his or her results were appropriate. You have explained why/not the results make sense in detail and have given alternate solutions. | The student provides a **detailed explanation** of the importance of his or her findings in connection to real life where appropriate and attempts to suggest improvements to his or her method where appropriate. |
| **7** | The lines of reasoning are **concise**, **logical** and **complete**. | The student **critically explains** whether his or her results make sense in the context of the problem and **justifies** the degree of accuracy of his or her results were appropriate. You have explained why/not the results make sense in great detail and have given alternate solutions. | The student provides a **detailed explanation** of the importance of his or her findings in connection to real life where appropriate and suggests improvements to his or her method where appropriate. |